

**Unerupted maxillary central incisors - Case Report**

<sup>1</sup>Vijay S., <sup>2</sup>Joby Peter, <sup>3</sup>Krishna Kumar, <sup>4</sup>Anaswara Mahima, <sup>5</sup>Teena Stanley

<sup>1-5</sup>Dept of Pedodontics, Malabar Dental College, Mannor Edappal , Malappuram, Kerala

**Corresponding Author:** Krishna Kumar, Reader, Dept of Pedodontics, Malabar Dental College, Mannor Edappal Malappuram, Kerala

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**Abstract**

Delayed eruption of permanent tooth is of significant concern for children in permanent dentition stage and their parents. This article shows case of a patient of 13 years of age who presented clinical absence of upper right central incisors. By using radiographic examination the impaction was confirmed. In this case report of a 13 year old girl is presented with unerupted maxillary right central incisors. The management involve clinical radiographic and orthodontic assessment. A diagnosis of hyperplastic gingivae preventing eruption of incisors was made. The surgical exposure and orthodontic traction of impacted central incisor after surgical exposure of impacted maxillary central incisor teeth is presented in this case report

**Keywords:** Unerupted central incisors, impacted central incisors, Delayed eruption.

**Introduction**

The maxillary incisors and canines, often referred to as the ‘social six’, are the most prominent teeth in an individual’s smile. They are also the teeth that are on maximum display

during speech in most individuals. The normal eruption, position and morphology of these teeth are crucial to facial esthetics and phonetics. As missing upper incisors are regarded as unattractive this may have an effect on self-esteem and general social interaction and it is important to detect and manage the problem as early as possible.<sup>(1)</sup>

Delayed eruption of maxillary incisors requires monitoring or intervention when

1. There is eruption of contra lateral teeth that occurred greater than six months previously
2. Both central incisors remain unerupted and the lower incisors have erupted greater than one year previously
3. There is deviation from the normal sequence of eruption (e.g. lateral incisors erupting prior to the central incisor).

The most conservative management would be the extraction of any obstruction, the creation of space and the observation for spontaneous eruption (Huber et al. 2008). Spontaneous eruption in 54–74 % of the cases of

unerupted incisors has been reported following the removal of any obstruction, without any further treatment (Mason et al. 2000). However, in many cases surgical exposure of the impacted teeth and orthodontic traction into the line of occlusion is the most indicated approach (Ferguson 1990).

Surgical procedures involve either exposure and packing of the area prior to placing an orthodontic attachment in a later visit or a one-step exposure and orthodontic attachment placement using a fully repositioned mucoperiosteal flap (Bishara 1992). However, as most of the successful cases regarding the orthodontic traction of unerupted maxillary central incisors include short-term case reports (Duncan and Ashrafi 1983; Crawford 1997; Lin 1999; Tanaka et al. 2001; Macias et al. 2003))<sup>2</sup>

### Case Report

A 13 year old female patient had reported to the Department Of Pedodontics And Preventive Dentistry, in Malabar Dental College & Research Centre with a chief complaint of missing upper front tooth since many years and was esthetically displeasing to both the patient and the parents (**Fig. 1**).

On Clinical examination at the time of the current presentation revealed good oral health and Permanent dentition. The left maxillary central incisor, both lateral incisors, the first premolars and the first molars were all fully erupted. The right maxillary central incisor was unerupted, the contralateral central incisor had erupted normally. An occlusal radiograph was taken which revealed the presence of impacted maxillary central incisors (**Fig 2**) and all set of orthodontic photographs were obtained.



Fig. 1: Photograph of a 13 year old girl at the time of presentation shows absence of right maxillary central incisor. The left maxillary central incisor and both maxillary lateral incisors are fully erupted

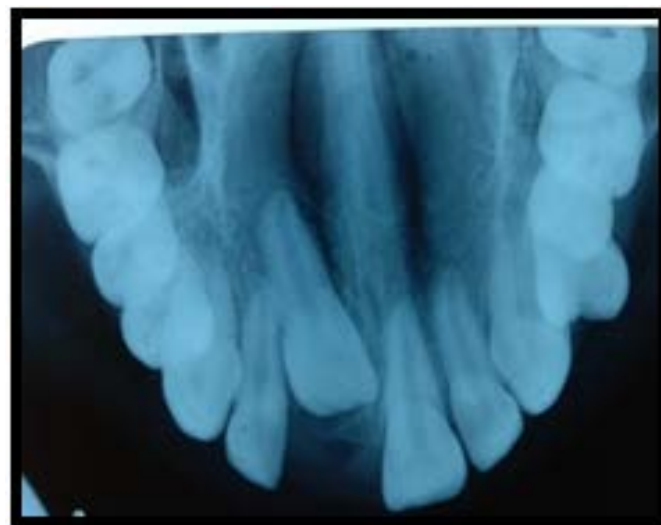


Fig. 2: An occlusal radiograph revealed presence of impacted central incisors.

Blanch test performed indicate a high frenal attachment seen extending to the incisal papilla region. The patient was diagnosed with impacted upper maxillary central incisors in relation to 11. Model analysis showed sufficient space available for the tooth to erupt into arch. The treatment described below was undertaken after obtaining the parent's written informed consent. Treatment plan consisted of two stages :- Laser assisted

incisor exposure along with frenectomy followed by fixed orthodontics



Firstly, laser incision was done using a 970 nm diode laser (FIG 3) . Frenectomy was performed using diode laser of 980nm with 14 watt power frequency (DENTSPLY SIRONA). The labial frenum was sprayed with topical spray and infiltration anesthesia was given to the frenum. The laser was activated before performing the procedure. Surgical tip at 400  $\mu$ m was used with a power of 1.37 W and was applied in contact mode. The incision was started with the frenum from the attached gingiva and interdental papilla on the labial surface between the central incisors extending upward from inner side of upper lip to the depth of vestibule ending in a rhomboidal area causing separation of the fibers. Bleeding was minimal and arrested completely after applying pressure with gauze [Figure 4&5]. Safety measures were taken for the dentist, assistance, and the patient by wearing the protective goggles. Once the labial portion of the crown was exposed, after bleeding was arrested , tooth surface was cleaned, dried and etched with 37% Orthophosphoric acid. An O22 mbt slot brackets were bonded onto tooth surface (FIG 6). Full strap up of the maxillary arch were done. A working wire 0.16 X 0.22

SS wire was placed. The exposed incisors was brought into arch with the help of a short chain elastic. Levelling and alignment was done upto 0.16X0.22 Ni-Ti wire. Once the maxillary incisor had reached the desired position in the dental arch, a final stage of levelling, alignment and rotation was undertaken, followed by a period of retention (FIG 7&8). The tooth was deboned followed by retention phase using Hawley's Appliance (FIG 9 & 10)



Fig. 3: Incision Placed



Fig. 4: Frenectomy Performed



Fig. 5: Tooth Exposed & Brackets Placed



Fig.6 : Tooth Repositioned



Fig. 7: After Debonding



Fig. 8: Retention Phase



Fig 9: Hawley's Appliance

### Discussion

Impaction is a pathological condition defined as the lack of eruption in the oral cavity of a permanent tooth and its retention in the maxillary bones. When the incisors do not

erupt at the expected time and an impaction is diagnosed, it is necessary to bring the un-erupted incisor into its correct position using surgical- orthodontic treatment because no prosthetic solutions is better than the tooth itself, as the volume of alveolar bone is preserved.(3) Several factors could cause the failure of a correct guided eruption of the impacted incisors, such as their excessive proximity to the adjacent teeth in the dental arch, the overlap of the crown on the roots, a great distance from the occlusal plane, ankylosis, and abnormal morphology of the crown. Repositioning of an impacted tooth involves risks of necrosis, root resorption, injury to adjacent teeth, alveolar bone loss, gingival recession, increase in clinical crown length, esthetic problems and tooth loss.(4,5) Today in dental practice the use of diode laser, characterized by 980 nm radiation wavelengths, is very common in soft tissue surgery and orthodontic procedure. When the impacted tooth is not deeply retained, and the surgical exposure of the crown allows the conservation of the attached gingiva, diode laser approach represents an advantageous solution. In fact, it allows not only the lack of bleeding during surgery, but also it avoids or reduces the use of analgesic and anti- inflammatory drugs, assuring minimal postoperative complications and the possibility to immediately position the retaining and traction means in the absence of bleeding.(6,7)

### Conclusion

When a permanent incisor does not erupt within the expected time, a precise diagnosis is required to schedule a correct treatment. Studies detected that disinclusion and orthodontic alignment of unerupted incisors is a secure and useful treatment. Aligned teeth have a correct function and correctly preserve the alveolar ridge and periodontal tissues. Laser-assisted surgical procedure has sufficient incision performance and advantage over conventional surgery in that there is a sealing of small



blood and resulting in haemostasis, reduced post-operative oedema and pain. The Er, Cr: YSGG laser can be regarded as an alternative method when compared to the conventional scalpel method because this laser technique heals teeth wound better by alleviating discomfort and complications significantly, which refers to the superiority of the technique.(8)

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